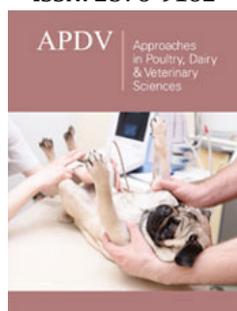


Effect of Temperature and Humidity on Growth of Chicken Broilers in Algeria

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Abstract

The objective of our study was to determine the relation between temperature and hygrometry degrees inside chicken broiler breeding buildings and growth performance in three cities of Algerian east. and the impact of these parameters on digestive morphometry. Our research was carried out in 5 breeding buildings over Souk Ahras city, Tebessa city and El Oued city, our results shows that chicken broilers production in El Oued city is influenced by temperatures high degrees during summer, but at the on the other hand in Souk Ahras and Tebessa city, it has no significant influence, where there is high degree of hygrometry. The parameters we recorded inside the buildings were: Degree of temperature and hygrometry: during summer months May, June, July, August. The biological measures that we carried out were different portions of digestive tract mass and length: duodenum, jejunum, ileum and caecum

Keywords: Algeria; Chicken broiler; Digestive; Hygrometry; Growth performance; Temperature

Introduction

It has been established in current researcher that the influence of temperature and hygrometry have an influence on production performance, although other research states that the variations of these parameters also depend on buildings location Cândido MGL et al. [1] co-stimulating to ventilation and feeding Liu W et al. [2] which have oscillatory and restrictive influence on breeding progress. Other authors Souza LF et al. [3] and Giannenas I et al. [4] cited that there is visible change in digestive organs morphometry as intestine portions: duodenum, jejunum, ileum and Caecum below the influence of temperature and hygrometry increase inside the breeding building. Our research is based on the demonstration of temperature and hygrometry effect on broiler chicken growth in three zones in Algeria, whose temperature and hygrometry are variable.

Materials and Methods

The study carried out at level of 3 breeding buildings of broiler chicken Located in 3 city of Algerian east, Souk Ahras, Tebessa, El Oued, animals were healthy of same age and breed is a, slaughtered in normal conditions, in which hygiene's feeding's and watering's conditions were respected. the location of these three zones has different climate and temperatures degrees, In El Oued temperature is about 38 with a humidity rate of 23% while the temperature of Tebessa city is 33.5 with a humidity level equal to 51% At Souk Ahras city, marked temperature is 28 with humidity rate equal to 62%. The measurements of ambient temperature inside the buildings were carried out with thermometer, and hygrometer for hygrometry measurement. The removal of organs performed after slaughter of 20 subjects for each building in histology laboratory of institute of agronomical and veterinary science Taoura university of Souk Ahras, a measurement and mass taken with a tape measure and precision balance, after separation of the four portions in each bowl, data were recorded on PC and analyzed by EXCEL 2016.

Result

During our work, it was elucidated in Souk Ahras city, that Duodenum's average mass was $10.37 \pm 1.57g$, while jejunum mass was $13.2 \pm 1.57g$ ileum mass was $12.1 \pm 1.56g$ and finally caecum's marked mass was $7.5 \pm 1.74g$, regarding the organ's length, we found that average length of duodenum was $33.33 \pm 1, 73cm$ and that of jejunum was $112.5 \pm 1.36cm$

and ileum's mean length was 17.16 ± 1.27 cm while that of caecum was 23.16 ± 1.44 cm. In Tebessa city. We revealed that duodenum's mass was 9.78 ± 1.85 g, that of jejunum was 9.21 ± 1.46 g average mass of ileum was 11.2 ± 1.36 g and that of Caecum was 4.56 ± 1.36 g, regards to duodenum's length was 16.5 ± 1.78 cm, it was noted that jejunum's length was 93.43 ± 1.96 cm and that of ileum was 14.53 ± 1.45 cm while length of Caecum was 15.73 ± 1.81 cm. At the level of El Oued city, the values of the mass found, 7.53 ± 1.85 g for duodenum, 8.04 ± 1.83 g for jejunum, whereas ileum's mass was 8.64 ± 1.28 g and that of caecum was 3.68 ± 1.92 g. The results obtained for duodenum's average length found was 15.83 ± 1.54 cm, while that of jejunum was 83.38 ± 1.45 cm, for mean length of ileum and caecum was 11.83 ± 1.66 cm and 10.67 ± 1.57 cm simultaneously.

Discussion

According to results it was noted that mass maximum value was contributed to jejunum in Souk Ahras city, whereas minimum value is found in El Oued city, similar researches of Beski SS et al. [5] reported that jejunum mass at the beginning of growth are reduced under thermal stress (27 and 4% respectively), regarding caecum mass and length that is reduced probably due to temperature high degrees, caecum length is also reduced under heat stress conditions. On the other hand, duodenum mass and ileum data are almost equal, report relative weights of 0.47 and 0.68% respectively for the duodenum, and the ileum, concerning portions length are very variable, its maximum value found in Souk Ahras city, and minimal value in El Oued city which corresponds to the data of the same authors 29,2 and 65,8 respectively for the duodenum and the ileum. For jejunum length, maximal value has been observed at the level of Souk Ahras city, whereas it is minimal at the level of El Oued city that coincides with the research result of Sugiharto S et al. [6] which shows that this organ length may regress under the effect of temperature.

Conclusion

Our work gathered information on the impact of temperature and hygrometry parameters in chicken broiler livestock buildings in ambient conditions encountered during summer season in Souk Ahras, Tebessa, El Oued. During our research, we noted lack of environmental conditions control with high stocking density,

added to that, a non-standard ambient temperature and very low relative humidity. These conditions denote a situation of chronic heat stress, which has strong impact on growth performance which gives by consequence: low consumption index, low sales weight and high mortality rate. The effect of high temperature and low humidity has an impact at the level of digestive morphometry [7]. This was manifested by deterioration of relative weight as well as digestive tract various compartments length. What is interesting is that obtained results in the three regions with various temperature and hygrometry degrees, indicates that temperature high degrees during summer period, are compensated by humidity inside buildings, it rides directly to physiological explanation: high temperature degrees cause growth slowing down clearly shown by food intake reduction, whereas the humidity helps chickens growing in high temperature conditions to compensate the stress.

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